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Notes on American Ferns—XIII[1]

WILLIAM R. MAXON

PTERETIS NODULOSA (MICHX.) NIEUWLAND.—The American ostrich fern, which is essentially boreal in distribution, is one of the rarer ferns in the vicinity of Washington, D. C., occurring on a few islands of the Potomac River and on alluvial bottoms of both the Maryland and Virginia sides. The Virginia locality, in Fairfax County, was recorded in 1899[2] as a new southernmost one for this species. The southern range may now be extended by the record of specimens recently collected in West Virginia, as follows: Abundant in a meadow along Dry Fork, a branch of Cheat River, at a point about 3 miles south of Horton, Randolph County, West Virginia, July 10, 1918, *E. T. Wherry & H. W. Trudell.* A specimen of this collection has been deposited in the National Herbarium by the collectors.

PELLAEA ANDROMEDAEFOLIA (KAULF.) FÉE.—This species, which is abundant at low altitudes through a large part of California, from Mendocino and Tehama counties southward to Lower California, occurs also in southwestern Oregon. The record is based on a characteristic specimen in the herbarium of the Oregon Agricultural College at Corvallis, collected at Roseburg, Oregon, in April, 1887, by Thomas Howell and labeled

[1] Published with the permission of the Secretary of the Smithsonian Institution.

[2] Fern Bull. 7: 71.

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in his hand as *P. andromedaefolia.* This extension of range, though not remarkable, seems never to have been placed on record. The reported occurrence of this species in Arizona appears to have been based upon misidentified specimens of *Pellaea intermedia* Mett.

SELAGINELLA SHELDONI MAXON.—The range of this recently described[1] ally of *S. rupestris,* of Texas and Oklahoma, is somewhat extended by the following Texas specimens, all in the herbarium of the Missouri Botanical Garden: Llano, October, 1847, *Lindheimer* 77; Llano County, on damp rocks, May, 1885, *Reverchon;* Hueco Tanks, July 1, 1895, *A. Isabel Mulford* 121; canyon north of Van Horn, El Paso County, July 11, 1900, *Eggert.*

WOODSIA SCOPULINA D. C. EATON.—A remarkable apparent extension of the range of this chiefly western species was brought to the writer's attention some time ago by Mr. C. A. Weatherby, who noted that a specimen in the Gray Herbarium said to have been collected September 14, 1903, "on a mountain 4 miles north of Old Sweet, West Virginia, altitude 850 meters," by Mr. and Mrs. E. S. Steele (No. 306), and distributed as *W. ilvensis,* seemed to be *W. scopulina.* The occurrence of *W. scopulina* in the West Virginia mountains was regarded as so unlikely as to suggest the possibility of mixed labels. The National Herbarium specimen could not at once be located; but Mr. Steele, while having no special recollection of the plant, referred to the interesting occurrence in the region mentioned of other types adventive from the west and saw no reason to doubt the authenticity of locality data in this instance. The specimen, since found, substantiates Mr. Weatherby's identification. Specimens of the same number were doubtless distributed to other herbaria

[1] Proc. Biol. Soc. Washington **31**: 171. 1918.

as well; and as there is no likelihood whatever that so large a series of individuals from some distant western region could have been introduced accidentally into the West Virginia collection, the latter locality data may properly be regarded as true. The station in question, which is on the boundary line of Virginia, extends the range of this species from Ontario and Quebec, a distribution not exactly paralleled by any other fern, so far as the writer knows. The distribution and distinctive characters of *W. scopulina* and related species form the subject of notes to be published shortly.

CHEILANTHES EATONI BAKER.—This species, though shown by Eaton[1] to be amply distinct from *C. tomentosa* Link, has rather commonly not been so recognized but regarded instead as a variety of *C. tomentosa*, and inasmuch as occasional specimens of each are still misidentified as pertaining to the other, it seems desirable to point out again some of the characteristic differences. *Cheilanthes tomentosa*, described originally from cultivated material, ranges from Virginia to Georgia, westward through Tennessee, Alabama, Arkansas, and Oklahoma to central Texas, the Organ Mountains of southern New Mexico, the Santa Catalina, Huachuca, and Santa Rita Mountains of southeastern Arizona, and sparingly into northern Mexico. It seems nowhere very abundant and becomes decidedly rare in the western portion of its range. *Cheilanthes Eatoni*, founded on Wright's No. 816 from western Texas, ranges from Oklahoma and central Texas widely through New Mexico to Colorado[2] and central Arizona, and southward far into Mexico, extending at least to the State of Puebla.

[1] Ferns N. Amer. **1**: 351, 352.

[2] Specimen in the National Herbarium, collected at "Devils Hole, Canyon of the Arkansas, 21 miles west from Canyon City, Colorado," Nov., 1875, by T. S. Brandegee. This locality is the only one listed by Rydberg (Fl. Colo. 4. 1906).

It is apparently as abundant in Arizona and New Mexico as *C. tomentosa* is rare in these regions. In a very few instances (namely, plants collected in Texas by Jermy, in the Huachuca Mountains by Lemmon in 1882, and in Mexico by Edw. Palmer) specimens of both have been brought together and distributed as one or the other species, but there is no certainty that they grew in close proximity. At any rate the characters distinguishing the two species are constant and quite sufficient for their immediate recognition. These may be summarized as follows:

C. tomentosa

Stipe and rachises rather copiously clothed with lax tawny hairs and numerous subflexuous, twisted, nearly filiform, laxly spreading scales, these mostly persistent and at length forming a loose or matted tomentum; broad scales wholly wanting.

Segments copiously but rather loosely tomentose beneath, delicately villous-tomentulose above with long, twisted, flexuous hairs, the segments not bound together by an intricate hairy covering.

Herbaceous margin of the segments deeply recurved, abruptly modified to a rather broad, white, distinctly membranous proper indusium.

C. Eatoni

Stipe, primary rachis, and lower side of secondary rachises imbricate-paleaceous; relatively large, flat, oblong-lanceolate, ascending scales of stipe and primary rachis underlaid by numerous, appressed, minute, acicular, rigid ones; scales of secondary rachises ovate-acuminate, widely imbricate, flaccid.

Segments densely matted-tomentose beneath, copiously and rather coarsely tomentose above, the entangled hairs of both surfaces closely enveloping and joining the fragile segments.

Herbaceous recurved margin of the segments less abruptly and completely modified, the narrow, whitish, membranous border forming a very scant true indusium.

There are additional characters found in the greater size of *C. tomentosa*, its more spreading and dissected pinnae, and the shape, number, and relative position of the segments; but these variable features are so dependent upon age, vegetative vigor, and seasonal condition as to be scarcely of diagnostic importance. The Jamaican plant long passing as *C. tomentosa* is a new species, shortly to be described.

CHEILANTHES WOOTONI MAXON.—This species, lately described from Arizona and New Mexico material, extends also to western Texas, a specimen at hand having been collected at El Paso, by Marcus E. Jones, April 16, 1884, and distributed as *C. Lindheimeri* Hook. Because of their tomentulose upper surfaces, *Cheilanthes Eatoni*, *C. tomentosa*, and *C. Lindheimeri* have not often been confused with *C. myriophylla* or with the several species mistakenly referred to it. They were accordingly omitted from the recent paper[1] dealing with the United States forms associated with *C. myriophylla*.

DRYOPTERIS DRYOPTERIS (L.) CHRIST.—An extension of range is noted in New Mexico specimens recently received from the Biltmore Herbarium, collected in moist thickets near Chama, Rio Arriba County, August 20, 1896, and distributed as No. 3136a of the Biltmore series, the collector's name not stated. The western area of this species has been known to extend from Alaska to Oregon, south in the mountains to Arizona and Colorado, but the plant has not hitherto been reported from New Mexico.

WASHINGTON, D. C.

Fern-hunting in Panama

ELLSWORTH P. KILLIP

The following article relates to the more general features of the fern flora of the Isthmus of Panama. During eight months recently spent in this region I made extensive collections, and specimens of ferns and of grasses and other flowering plants have been referred respectively to Messrs. Maxon, Hitchcock and Standley, of the United States National Herbarium. A number

[1] Proc. Biol. Soc. Washington **31**: 139–152. 1918.